

Section 3.3.2. Water Supply Element

Pursuant to Sections 163.3167, 163.3177, and 163.318 Florida Statutes.

Background Discussion

The purpose of this element is to provide for adequate potable water delivery facilities and services to support existing land uses and future land use projections.

The data and analyses for this element of the *Sanibel Plan*, pursuant to Section 163.3177(6)(c), Florida Statutes is summarized in this subsection.

Adequate supply of fresh water could become a serious economic constraint upon future growth and development in the City of Sanibel.

This Water Supply Element to the *Sanibel Plan* also presents the Ten-Year Water Supply Facilities Work Plan for the City of Sanibel. This Ten-Year Plan also includes Captiva Island, which is part of unincorporated Lee County. Captiva Island's proportionate share of demand on the Water Supply Facilities Plan is approximately 20 percent of total demand.

Ten-Year Water Supply Facilities Work Plan

The population estimates and projections for the City of Sanibel and Captiva Island that were used for the preparation of this Water Supply Facilities Work Plan were taken from the 2012 Lower West Coast Water Supply Plan, adopted November 15, 2012. However, the functional population for the City of Sanibel and Captiva Island, from the Land Use Element of the

Sanibel Plan, was also used in the preparation of this Water Supply Facilities Plan.

These population estimates and projections extend past the timeframe for this Ten-Year Plan, to 2030.

The Island Water Association (IWA), a nonprofit community cooperative with exclusive franchise serving Sanibel and Captiva Islands, owns and operates the public water system on Sanibel. In 2012, the IWA operated five storage tanks which have a total capacity of 15 million gallons of water. The reverse osmosis (RO) plant currently has a permitted capability of 5.99 million gallons of water per day (MGD). The IWA distributes the treated water from its treatment facilities directly to all areas of Sanibel and Captiva. The IWA owns and operates three remote pumping stations to boost the pressure in the outlying areas of the distribution system.

The Lower Hawthorn Aquifer and the Suwannee Aquifer are the current principal source of the domestic water supply for Sanibel and Captiva residents. The subaqueous line connection to the Pine Island Water Association was re-established in 1994.

In 2000, a deep well injection well was placed in service at the Reverse Osmosis plant. The brine discharge line to the Gulf of Mexico has been retained as a backup disposal route. This injection well is also available to the Sanibel Sewer System for wet weather disposal of treated effluent.

In 2000, an amendment to the Future Land Use Map (Ecological Zones Map) established an 18.5 acre Special Use District for the Administrative Offices and Reverse Osmosis Water Treatment Plant of the IWA.

Section 3.3.2.

Routine maintenance keeps the reverse osmosis plant and distribution components in good operating condition. The life expectancy of the water delivery system, including plant, pumping stations, storage tanks and distribution lines, is anticipated to extend well beyond the planning period of this Plan.

The potable water treatment and delivery system that serves the City of Sanibel also serves Captiva, which is outside the City's jurisdiction. The City of Sanibel's proportionate share of demand on the water system is approximately 80%. Existing and projected demand for potable water is derived in a manner that is consistent with the population estimates and projections of this Plan.

Demand is presented on the basis of dwelling units and equivalency units for land uses other than residential uses.

Average demand, both existing and projected, are provided in the following table.

	Average Demand (in million gallons per day - MGD)		
	2011	2016	2022
Average	3.49	4.1*	4.2*
* Projections from the South Florida Water Management District's Lower West Coast Water Supply Plan			
Source: Island Water Association and Sanibel Planning Department.			

The IWA operates in accordance with a consumptive use permit from the South Florida Water Management District. The

consumptive use permit allows a maximum daily allocation of 8.08 million gallons per day, which is adequate for both existing and projected demand for potable water. The IWA may need to apply for an increase in permitted average daily withdrawals from the brackish water supply to meet future demand conditions.

Both the Water Supply Element and the Conservation Element of the Sanibel Plan encourage the conservation of water resources. The conservation of water resources is the preferred approach for addressing and supplying the demand for water. In 1997, in an effort to reduce consumption, the *Sanibel Plan* was amended to reduce the level of service standard for potable water. The objective of the IWA is to serve existing and projected development on Sanibel and Captiva with existing treatment and storage facilities. Conservation, not continuing increases in the consumption rate, will be required to attain that objective or some expansion, either in production or storage capabilities, will need to be considered.

The actual level of service of the potable water delivery system is approximately 400 gallons per day per unit (dwelling units and equivalency units). This level of service includes surplus system capacity and is, therefore, higher than the level of service requirement established in this element of the *Sanibel Plan*.

Storage capacity to augment flow and pressure for peak demand and fire flow needs is adequate for current and future needs. If future water capacity is required, the IWA has the design and will consider permitting an underground storage and recovery well (ASR).

The Ten-year plan for building water supply facilities to serve existing and projected development relies on the efficient use of existing facilities, but also the expansion of the program to

reuse treated wastewater for irrigation purposes. The IWA and the City of Sanibel need to coordinate on this effort. The reuse program will be expanded as cost-effective ways are identified and implemented.

Growth in Lee County, especially in the western portion of the County, will involve increased extraction of water from the Lower Hawthorn Aquifer. Quality and quantity of water are major concerns.

The reverse osmosis treatment plant has sea water desalting capability should that need ever arise. Although the plant is not configured for sea water at this time, extensive modifications can be made to convert it. Because of the possible limitations on adequate future water supply, several alternatives for supply and conservation were considered. It is important to note that should it become necessary to use the Gulf or Bay for source water, the recovery rate would be very low and the cost of producing potable water would increase significantly.

One important conservation element is the plugging of existing unused wells tapping the Lower Hawthorn and Suwanee formation. These wells are contributing to the deterioration of the City's water supply resource that, along with other factors, might ultimately render it useless. The IWA plugs its wells promptly on abandonment.

Summary for the Ten-Year Water Supply Facilities Work Plan

The production of potable water for distribution is limited by the capacity of the treatment plant. At this point the IWA has no immediate plans to expand the capacity of the reverse osmosis plant; however, the plant can be expanded if unforeseen contingencies arise.

The existing treatment plant's capacity is adequate to maintain the current level of service standard and to meet existing demand and projected demand through the long-range planning period of the *Sanibel Plan* ending in 2022. If an increase in demand occurs, the IWA can construct an underground storage and recovery well (ASR) to accommodate the peak demand periods if deemed feasible. This ASR well is not included in the 5-Year Schedule of Capital Improvements in Part 3.5 Capital Improvements of the *Sanibel Plan*.

The Ten-Year Water Supply Facilities Work Program for the City of Sanibel has identified water supply sources for the long-range planning period of the *Sanibel Plan*. The Land Use Element and Future Land Use Map series of the *Sanibel Plan* are based on and consistent with this Ten-Year Water Supply Facilities Work Program for the City of Sanibel.

This Water Supply Element of the Sanibel Plan contains a policy (2.2) that ensures that the water supply will be available concurrently with the issuance of building permits.

Provisions of the Plan for Water Supply (Strategies and Coordination of Activities with the IWA)

1. The City shall maintain a close relationship with the IWA, whose members largely are property owners and residents of the City, assuring accord in dealing with community problems while remaining alert to any advantages of municipal ownership or franchise should the City so determine.
2. The capital improvement programs prepared by the IWA and the City shall be coordinated.

3. The IWA shall provide and upgrade service at locations where growth is projected to occur.
4. The treatment process for and the delivery of potable water for the City of Sanibel shall be supported by backup power sources for use during periods for prolonged electrical outages.
5. The City requires, as a part of the development permitting process, that all private wells be identified, so they can be considered for incorporation into the well plugging program. The City should continue to implement a program that would lead to plugging of all existing unused wells and phasing out of existing private wells that draw water from the Lower Hawthorn aquifer.
6. The City shall continue to monitor and investigate the general hydrology of the Island.
7. The City encourages the IWA to implement and continue policies that discourage over consumption of potable water.
8. The City shall assist in the implementation of the improvements necessary to upgrade the fire protection system of the City of Sanibel.
9. Maintain minimum pressure in the distribution system when hurricane evacuation order is given.
10. The City shall encourage the use of 100 percent of its reuse water.

Goals, Objectives and Policies

Goal Statement

Provide adequate potable water supply facilities for residents and land uses in the City of Sanibel in a manner that serves existing development, promotes orderly growth, protects investment in existing facilities, and conserves water resources.

Objective 1

Ensure the continued maintenance of an adequate level of service for potable water supply facilities.

Policy 1.1. Preserve and maintain existing potable water supply facilities through implementation of proper maintenance and upkeep procedures.

Policy 1.2. Provide adequate potable water supply facilities. At a minimum, potable water supply facilities will be provided in accordance with the following level of service standard.

Standard for Water Supply Facilities

An average potable water production rate of 300 gallons per day per equivalent residential unit

Policy 1.3. Improvements for replacement, expansion or increase in capacity of potable water supply facilities will be consistent with maintaining the level of service standard for potable water supply facilities.

Objective 2

To ensure the maximum feasible use of existing potable water supply facilities, the expansion of these facilities, including the distribution system, will be consistent with the Future Land Use Element of this Plan.

Policy 2.1. Developments that require the use of potable water must connect to the IWA potable water delivery system.

Policy 2.2. Development orders and building permits for new developments, or the expansion of existing developments that require additional potable water, will not be issued until the developer furnishes proof from the IWA of the availability of potable water to serve the development and makes provision for the infrastructure to deliver the water.

Objective 3

Ensure the conservation of potable water resources through the preservation and protection of the water supply.

Policy 3.1. Through regulations in the Land Development Code, continue to preserve native vegetation within developments and require the use of native vegetation for landscaping and revegetation efforts.

Policy 3.2. Implement the water shortage plan when appropriate, for the purpose of allocating and conserving water resources during periods of water shortage.

Policy 3.3. The City and the IWA should pursue some means of allowing local regulation of shallow wells for irrigation purposes.